This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) A data management method, comprising:

using an operating system, operating a source volume of a source device wherein the source volume includes storage, a plurality of user files stored in said storage and a file system for locating said user files stored in said storage, said file system including an address table identifying the location of each file on said storage device, said operating including said operating system locating said user files in said storage using said file system and said address table of said file system;

backing up contents of ~~a~~ the source volume of the source device at a first client station as at least one object of a database stored in a data storage subsystem wherein the at least one object represents an image of the contents of the source volume of the source device ~~and wherein the image of the contents of the source device includes a plurality of files and a file directory of the source device~~;

using the database, tracking attributes and location of the at least one object in the database;

using the at least one object, restoring the contents of the source volume of the source device from the at least one object to at least one record of a target file in a file system stored on a storage device instead of to a volume being operated as a volume by an operating system so that the at least one record of the target file contains internally within said at least one record of said target file, image data representing said contents of the source volume ~~device~~ including image data representing both said plurality of files and said file system ~~directory~~ of the source volume within said at least one record of said target file ~~device wherein said file system comprises a plurality of files and an address table identifying the location of each file on said storage device~~;

24   using an operating system, using the target file containing the image data as a file

25 instead of a volume so that the target file is not operated as a volume by an operating

26 system; and

27   copying image data representing the restored contents of the source volume device

28 from the at least one record of the target file to a target volume of a target device so that

29 the target volume device contains the restored contents of the source volume device

30 including said plurality of files of the source volume device and said file system directory

31 of the source volume device; and

32   using an operating system, operating the target volume as a volume, including

33 locating said user files in said target volume using said file system of said target volume

34 so that the target volume is operated as a volume instead of a file by an operating system.

1   2. (previously presented)   The method of claim 1 wherein the target file is stored

2 on storage media at a second client station.

1   3. (currently amended)   The method of claim 1 wherein the target file is a flat file

2 which contains in a single record of the flat file the image data representing the complete

3 contents of the source volume device.

1   4. (cancelled)

1   5. (original)   The method of claim 1 wherein the data storage subsystem includes

2 a server coupled to the first client station by a network.

1   6. (original)   The method of claim 1 further comprising, using the at least one

2 object, restoring the contents of the source device from the at least one object to a target

3 device so that the target device contains the contents of the source device.

1   7-9. (cancelled)

1   10. (original)   The method of claim 1 further comprising mounting the source
2 device as a read only device wherein write operations to said source device are prevented
3 during said backing up of said source device.

1   11. (previously presented)   The method of claim 1 wherein said target file is a flat
2 file.

1   12. (original)   The method of claim 1 wherein said copying uses the UNIX dd
2 command.

1   13-36. (cancelled)

1   37. (currently amended) An article of manufacture for data management,
2 wherein the article of manufacture causes operations to be performed, the operations
3 comprising:
4   using an operating system, operating a source volume of a source device wherein
5 the source volume includes storage, a plurality of user files stored in said storage and a
6 file system for locating said user files stored in said storage, said file system including an
7 address table identifying the location of each file on said storage device, said operating
8 including said operating system locating said user files in said storage using said file
9 system and said address table of said file system;
10   backing up contents of ~~a~~ the source volume of the source device at a first client
11 station as at least one object of a database stored in a data storage subsystem wherein the
12 at least one object represents an image of the contents of the source volume of the source
13 device ~~and wherein the image of the contents of the source device includes a plurality of~~
14 ~~files and a file directory of the source device;~~

15   using the database, tracking attributes and location of the at least one object in the

16   database;

17   using the at least one object, restoring the contents of the source volume of the

18   source device from the at least one object to at least one record of a target file in a file

19   system stored on a storage device instead of to a volume being operated as a volume by

20   an operating system so that the at least one record of the target file contains internally

21   within said target file, image data representing said contents of the source volume device

22   including image data representing both said plurality of files and said file system

23   directory of the source volume within said at least one record of said target file device,

24   said file system comprising a plurality of files and an address table identifying the

25   location of each file on said storage device;

26   using an operating system, using the target file as a file instead of a volume so

27   that the target file is not operated as a volume by an operating system; and

28   copying image data representing the restored contents of the source volume device

29   from the at least one record of the target file to a target volume of a target device so that

30   the target volume device contains the restored contents of the source volume device

31   including said plurality of files of the source volume device and said file system directory

32   of the source volume device; and

33   using an operating system, operating the target volume as a volume, including

34   using said operating system, locating said user files in said target volume using said file

35   system of said target volume so that the target volume is operated as a volume instead of

36   a file by an operating system.

1   38. (previously presented)   The article of manufacture of claim 37 wherein the

2   target file is stored on storage media at a second client station.

1 39. (currently amended)   The article of manufacture of claim 37 wherein the
2 target file is a flat file which contains in a single record of the flat file the image data
3 representing the complete contents of the source device.

1 40. (previously presented)   The article of manufacture of claim 37 wherein the
2 data storage subsystem includes a server coupled to the first client station by a network.

1 41. (previously presented)   The article of manufacture of claim 37 wherein the
2 operations further comprise:
3 using the at least one object, restoring the contents of the source device from the at
4 least one object to a target device so that the target device contains the contents of the
5 source device.

1 42-44. (cancelled)

1 45. (previously presented)   The article of manufacture of claim 37 wherein the
2 operations further comprise:
3 mounting the source device as a read only device wherein write operations to said
4 source device are prevented during said backing up of said source device.

1 46. (previously presented)   The article of manufacture of claim 37 wherein said
2 target file is a flat file.

1 47. (previously presented)   The article of manufacture of claim 37 wherein said
2 copying uses the UNIX dd command.

1 48. (currently amended) A subsystem for managing data for use with a plurality
2 of client stations coupled together by a network, said client stations including a source

3   client station having a source device and a target client station having a target <u>device,</u>

4   <u>each source device having a source volume which includes storage, a plurality of user</u>

5   <u>files stored in said storage and a file system for locating said user files stored in said</u>

6   <u>storage, said file system including an address table identifying the location of each file on</u>

7   <u>said storage device</u> ~~storing a file system comprising a plurality of files and an address~~

8   ~~table identifying the location of each of said plurality of files~~, comprising:

9   a data storage device having a database comprising a plurality of objects;

10   a digital data processing apparatus coupled to the storage device, wherein the

11   digital data processing apparatus <u>includes an operating system and</u> is programmed to

12   perform ~~a~~ data management ~~method~~ <u>operations</u> ~~method~~, said ~~method~~ <u>operations</u>

13   comprising:

14   <u>using the operating system, operating a source volume of a source device</u>

15   <u>including said operating system locating said user files in said storage using said</u>

16   <u>file system and said address table of said file system;</u>

17

18   backing up contents of ~~a~~ <u>the source volume of the</u> source device at a source

19   client station as at least one object of said database stored in said data storage

20   device wherein the at least one object represents an image of the contents of the

21   <u>source volume of the</u> source device ~~and wherein the image of the contents of the~~

22   ~~source device includes a plurality of files and a file directory of the source device~~;

23   using the database, tracking attributes and location of the at least one

24   object in the database;

25   using the at least one object, restoring the contents of <u>the source volume of</u>

26   the source device from the at least one object to <u>at least one record of</u> a target file

27   in said file system stored on a target device of a target client station <u>instead of to a</u>

28   <u>volume being operated as a volume by an operating system</u> so that the target file

29   contains internally within said <u>at least one record of said</u> target file, <u>image data</u>

30   <u>representing</u> said contents of the source <u>volume</u> ~~device~~ including <u>image data</u>

31   representing both said plurality of files and said file system directory of the source

32   volume within said at least one record of said target file device;

33   using an operating system, using the target file as a file instead of a

34   volume so that the target file is not operated as a volume by an operating system;

35   and

36   copying image data representing the restored contents of the source

37   volume device from the at least one record of the target file to a target volume of

38   a target device of a target client station so that the target volume client station

39   contains the restored contents of the source volume device including said plurality

40   of files of the source volume device and said file system directory of the source

41   volume device; and

42   using an operating system, operating the target volume as a volume,

43   including using said operating system, locating said user files in said target

44   volume using said file system of said target volume so that the target volume is

45   operated as a volume instead of a file by an operating system.

1   49. (previously presented)   The subsystem of claim 48 wherein the target file is

2   stored on a target device of a target client station different from said source client station.

1   50. (currently amended)   The subsystem of claim 48 wherein the target file is a

2   flat file which contains in a single record of the flat file the image data representing the

3   complete contents of the source volume device.

1   51. (previously presented)   The subsystem of claim 48 wherein the digital data

2   processing apparatus includes a server coupled to the first client station by said network.

1   52. (currently amended)   The subsystem of claim 48 wherein said operations

2   method further comprise comprises:

3   further comprising, using the at least one object, restoring the contents of the

4   source device from the at least one object to a target device so that the target device

5   contains the contents of the source device.

1   53-55. (cancelled)

1   56. (currently amended)   The subsystem of claim 48 wherein said <u>operations</u>

2   ~~method~~ further <u>comprise</u> ~~comprises~~:

3   mounting the source device as a read only device wherein write operations to said

4   source device are prevented during said backing up of said source device.

1   57. (previously presented)   The subsystem of claim 48 wherein said target file is a

2   flat file.

1   58. (previously presented)   The subsystem of claim 48 wherein said copying

2   uses the UNIX dd command.

1   59. (currently amended) A data management method, comprising:

2   <u>using an operating system, operating a source volume of a source device wherein</u>

3   <u>the source volume includes storage, a plurality of user files stored in said storage and a</u>

4   <u>file system for locating said user files stored in said storage, said file system including an</u>

5   <u>address table identifying the location of each file on said storage device, said operating</u>

6   <u>including said operating system locating said user files in said storage using said file</u>

7   <u>system and said address table of said file system;</u>

8   mounting ~~a~~ <u>the</u> source device as a read only device wherein write operations to

9   said   source device are prevented during backing up of said source device;

10   backing up the complete contents of ~~said~~ <u>the source volume of the</u>   source device

11   at a first client station as at least one object of a database stored in a data storage

12   subsystem which includes a server coupled to the first client station by a network wherein

13   the at least one object represents an image of the contents of the <u>source volume of the</u>

14   source device ~~and wherein the image of the complete contents of the source device~~

15   ~~includes a plurality of files and a file directory of the source device~~;

16   using the database, tracking attributes and location of the at least one object in the

17   database;

18   determining that a target device is not available;

19   in response to said determination that said target device is not available, using the

20   at least one object, restoring the contents of <u>the source volume of</u> the source device from

21   the at least one object to <u>a single record of</u> a flat target file in a file system stored on a

22   storage device at a second client station <u>instead of to a volume being operated as a</u>

23   <u>volume by an operating system</u> so that the <u>single record of the</u> flat target file contains

24   internally within said <u>single record of the flat</u> target file, <u>image data representing</u> said

25   complete contents of the source <u>volume</u> ~~device~~ including <u>image data representing both</u>

26   said plurality of files and said file <u>system</u> ~~directory~~ of the source <u>volume</u> ~~device~~ <u>within</u>

27   <u>the contents of the single record of the flat target file</u>~~, wherein said file system~~

28   ~~comprises a plurality of files and an address table identifying the location of each file on~~

29   ~~said storage device~~;

30   <u>using an operating system, using the flat target file as a file instead of a volume so</u>

31   <u>that the flat target file is not operated as a volume by an operating system;</u> ~~and~~

32   copying <u>image data representing</u> the ~~restored~~ complete contents of the source

33   <u>volume</u> ~~device~~ from the <u>single record of the</u> flat target file using the UNIX dd command

34   to <u>a target volume of</u> said target device when available so that the target <u>volume</u> ~~device~~

35   contains the complete <u>restored</u> contents of the source <u>volume</u> ~~device~~ including said

36   plurality of files of the source <u>volume</u> ~~device~~ and said file <u>system</u> ~~directory~~ of the source

37   <u>volume</u> ~~device~~; <u>and</u>

38   <u>using an operating system, operating the target volume as a volume, including</u>

39   <u>using said operating system, locating said user files in said target volume using said file</u>

40   system of said target volume so that the target volume is operated as a volume instead of

41   a file by an operating system.